Safety Notice

Health and Safety Warning Notice 02/09

High voltage 11kV electricity distribution equipment: Lucy switchgear FRMUE extensible oil ring main unit, EFS extensible oil fused switch and EOS extensible oil switch

MANDATORY

SUBJECT CONTACT POINT:

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NOTICE AUTHORISED BY:

Date: 6th September 2002

DEFENCE ESTATES
MINISTRY OF DEFENCE

Safety Notice

HEALTH AND SAFETY WARNING NOTICES -
A CUMULATIVE LIST FOR 2001/2002

If missing copies are required, please contact your TLBH distribution point in the first instance.

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Sutton Coldfield
West Midlands B75 7RL

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A full list of DE, MOD and PSA publications which are relevant to works activities on the Defence Estate are contained in the DE Technical Publications Index (TPI). For MOD employees copies of the TPI are available through your TLBH works focal points. Consultants and Contractors should obtain copies from The Stationery Office.

Serial	Title
01/12	High voltage 11kV electricity distribution equipment: REYROLLE C6T: Voltage transformer: Catastrophic failure
01/13	Low voltage lighting equipment Menvier Weatherlite WLM, WLN & WLS emergency luminaires - Risk of electric shock
01/14	High voltage 11kV electricity distribution equipment: Merlin Gerin - CE2 CE6 CN2 - Circuit Breaker
01/15	High voltage 11kV electricity distribution equipment: Whipp & Bourne - DV40 - Circuit Breaker
01/16	Low voltage lighting equipment: Casarano Illuminazione Srl luminaires and suspension system
01/17	High voltage 11kV electricity distribution equipment: Yorkshire Switchgear - IV1 and IV10 - Circuit Breakers
01/18	High voltage 11kV electricity distribution equipment: Yorkshire Switchgear - suspension of normal operational practice
01/19	Airfield high voltage ground lighting electricity distribution equipment: MK6 Cable termination panels manufactured by ATG & TES - Risk of electric shock
01/20	High voltage 11kV electricity distribution equipment: Circuit Breaker - R4/1 - Brush Switchgear
01/21	High voltage 11kV electricity distribution equipment: Lucy RMU-TRMU TSU MK2-Lucy - suspension of normal operational practice
01/22	High voltage 11kV electricity distribution equipment: FKI HAWKER SIDDELEY ECLIPSE CIRCUIT BREAKER - Suspension of normal operational practice
01/23	High voltage 11kV Electricity Distribution Equipment: VMV12 HAWKER SIDDELEY CIRCUIT BREAKER - Suspension of normal operational practice
01/24	Asbestos used as packing in window frames
01/25	High voltage 11kV electricity distribution equipment: - BRUSH Circuit Breaker VBA, VTD and VSI R4/1
02/01	Low Voltage Distribution Equipment: ABB T&D Nitran LV Pillar - Suspension of Normal Operational Practice
02/02	Low Voltage Portable Fume Extraction Systems: METCAL BVX-101 and BVX-103 - Suspension of Normal Operational Practice
02/03	Pin-index Medical Gas Cylinders, Size C, D, E, F and G
02/04	Distribution Equipment: Suspension of Normal Operational Practice. Protection-Relay Alstom K Series, KBCH, KCGG142, KCEG142, KVFG and KVGC
02/05	Low Voltage Distribution Equipment: Suspension of Normal Operational Practice. Square D, QOE, 240V, 1ph, MCB/RCD
02/06	LV Distribution Equipment: Suspension of Normal Operational Practice. Mains RF Filter's Types L2420TS, L2421TS, L2422TS, L2423TS, L2424TS, L2425TS, L2426TS, L2427TS, L1923, L1924, L1925, L1926 and L1927
02/07	Pressure system safety regulations 2000 (High Temperature Hot Water)
02/08	Inspection of Hangar Doors, Door Top Guides, Supports and Door Stops. Type C and other similar Hangars
02/09	High voltage 11kV electricity distribution equipment: Lucy switchgear FRMUE extensible oil ring main unit, EFS extensible oil fused switch and EOS extensible oil switch

Safety Notice 02/09

High voltage 11kV electricity distribution equipment: Lucy switchgear FRMUE extensible oil ring main unit, EFS extensible oil fused switch and EOS extensible oil switch

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INTRODUCTION

1. THE CONTENTS OF THIS NOTICE ARE TO SECURE COMPLIANCE WITH THE HEALTH & SAFETY AT WORK ETC ACT 1974.

2. This Notice is for the attention of Commanding Officers, Chief Executives, Heads of Establishment, Property Managers, Defence Land Agents, Establishment Works Consultants (EWCs), Works Services Managers (WSMs), Authorising Engineers, Authorised Persons and Contractors involved in works for MOD.

3. This Notice is to be read by all persons involved with any works associated with the equipment that is the subject of this Notice.

4. The Property Manager or the appropriate MOD Officer shall arrange for the WSM to carry out all actions in accordance with this Notice.

5. No work involving expenditure on an MOD account is to be carried out without authority from the Property Manager or the appropriate MOD officer for that location or facility.

6. Any work required as a result of this Safety Notice must be carried out in accordance with MOD Safety Rules and Procedures, as applicable.

7. Defects are to be immediately reported to the Property Manager or appropriate MOD Officer, who must ensure that appropriate operating restrictions on the equipment that is the subject of this Notice are applied.

8. For MOD Establishments occupied by United States Visiting Forces (USVF), the responsibilities of Property Manager, EWC and WSM are jointly held by the USVF and DE(USF). At base level, this jointly managed organisation is to take appropriate action to implement the contents of this Notice. Where this Safety Notice contains procedures which differ significantly from USVF practice, a DE(USF) Code of Practice section will be issued.

REQUIREMENT

9. ACTION ADDRESSEES ARE TO ENSURE THAT THIS INFORMATION IS PASSED TO THEIR PROPERTY MANAGERS OR OTHER RESPONSIBLE OFFICERS WITHOUT DELAY.

10. This Notice applies to all High Voltage 11kV Electricity Distribution Equipment: Lucy Switchgear FRMUE Extensible Oil Ring Main Unit, EFS Extensible Oil Fused Switch and EOS Extensible Oil Switch.

11. It is a requirement that as soon as reasonably practicable, but no later than the next annual shutdown, that all extensible BusBar sections between Lucy Switchgear FRMUE type Extensible Oil Ring Main Units and Lucy Switchgear EFS type Extensible Oil Fused Switch, or EOS type Extensible Oil Switches are inspected. Prior to the inspection, the switchgear should not be switched live except where local risk assessment identifies that it is safe to do so.

12. If a Pirelli system (see Annex A - W Lucy User Manual Section F or J attached) has been used either for the BusBar Extension Joint or for the BusBar end cap then these should be replaced as soon as practicable with a Shrink Polymer System. In the intervening period, the switchgear should not be switched live except where local risk assessment identifies that it is safe to do so.

13. If a Raychem System has been used either for the BusBar Extension Joint or for the BusBar end cap then ensure that the Raychem system has been applied in accordance with Manufacturer's User Manual (see Annex B - W Lucy User Manual Section E or H). Also, visually check that there is no signs of moisture ingress or degradation of the insulation. If it is believed that either the BusBar Extension Joint or the BusBar end cap has not been installed in accordance with Manufacturer's User Manual, or there are signs of moisture ingress or signs or degradation then they should be replace with a Shrink Polymer System as soon as practicable. In the intervening period, the switchgear should not be switched live except where local risk assessment identifies that it is safe to do so.

14. W Lucy recommend either the Raychem Busbar insulation system or the Shrink Polymer Systems insulation system. Details of the Shrink Polymer System can be found at Annex C. Details of the kit are available from:

    Shrink Polymer Systems
    Units P1-P3 Grovemere Court
    Bicton Industrial Park
    Kimbolton
    Cambs
    PE2B OEY
    Tel: 01480 861001

15. The equipment may be returned to normal operation after completion of the inspection and or modifications detailed above and subject to the approval of the appropriate WSM Authorising Engineer, or other responsible officer appointed to carry out Authorising Engineer duties.

BACKGROUND

16. This HSWN is to advise of a deterioration, moisture ingress and possible failure of the BusBar Extension Joint and/or End cap using either the Raychem or Pirelli Insulation System that is particular to Lucy Switchgear FRMUE Extensible Oil Ring Main Units, Lucy Switchgear EFS Extensible Oil Fused Switch and Lucy Switchgear EOS Extensible Oil Switches.

17. Defence Estates has received several reports of the failure of the insulation on the BusBars between Lucy Switchgear FRMUE type Extensible Oil Ring Main Units, and Lucy Switchgear EFS type Extensible Oil Fused Switch and/or Lucy Switchgear EOS type Extensible Oil Switches. This is due to moisture ingress into BusBar Extension Joint and/or End cap using either the Raychem or Pirelli System and resulted in a flashover between phase and earth.

18. This failure may be the result of degradation due to the age of the joint, due to poor workmanship or repairs. The manufacturer also notes that there are a high number of failures with the Pirelli type of insulation.

    For further information contact:

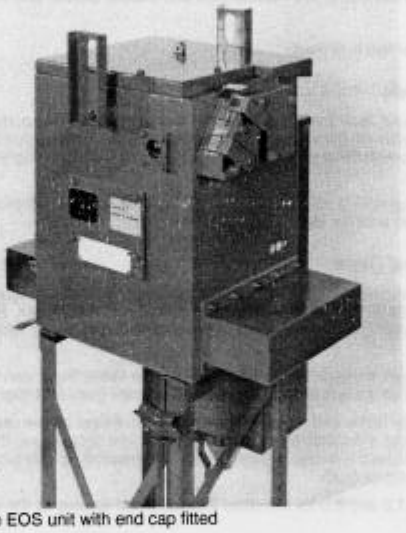
    Mr Ken Coats
    Lucy Switchgear Ltd
    Walton Well Road
    OXFORD
    OX2 6EE

    Tel: 01865 311411
    Fax: 01865 310504

END OF SAFETY NOTICE

Annex A - Pirelli System
W Lucy User Manual
Sections F and J

SECTION F - Application of Bus Bar End Cap - Pirelli System



Type EOS unit with end cap fitted

Contents of End Cap Kit. Ref. 3870002007.

Pirelli Kit Ref. DF9030A
Comprising:
- 1 - Tube of silicone grease
- 3 - End cap
- 3 - Dip moulded shroud
- 3 - Silicone rubber tube
- 3 - Adaptor bush
- 3 - Cable tie

Box cover
Cover gasket
12 - M8 full nuts
12 - M8 spring washers

SECTION F - Application of End Cap Insulation

Fitting Silicone Tubing

1.0 To fit the silicone tubing item4 apply a small amount of silicone compound to the bushing and also to the inside of the tube. Fold back the leading edge of the tube to ease application and slip the tube onto the bushing. When fully home flip over the leading edge and trim the tube to sit flush with the end of the bushing. Repeat for the other two bushings.

Fitting Dip Moulded Shrouds

1.0 Lightly grease both the end of the silicone tube and copper busbar and slip the dip moulded shroud item 6 into position.

Repeat for the other two bushings.

Fitting Adaptor Bush

1.0 To fit the adaptor bush item 3 apply a gmall amount of silicone compound to both the tube and the adaptor bush and slide on the adaptor bush as per drawing. Ensure that the adaptor bush is fully home and making contact with the 4 bolt heads that secure the resin bushing into the oil tank. Repeat for the other two bushings.

2.0 Using a suitable degreasing solvent remove any residual silicone compound left on the silicone tube as this will help lock the adaptor bushes into position.

Fitting the Dead End Caps

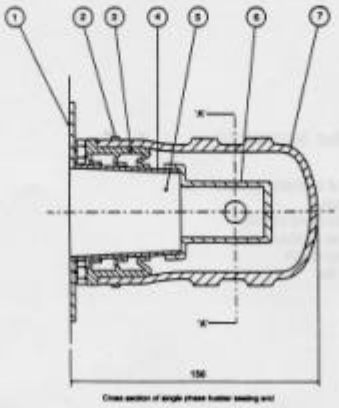
1.0 Lightly grease the outside of the adaptor bush ensuring the whole surface is covered, then lightly grease the inside of the dead end cap item 7 to a depth of 50 to 60mm. Slide the cap into position on the bush using a twisting action which will aid the expulsion of the air which becomes trapped as it is slipped on.

Note: In some cages if the air is difficult to remove the index finger can be used to provide a vent for the trapped air if it is inserted between the adaptor bush and cap during application.

2.0 When the cap is fully home and making contact with the flange on the rear of the adaptor place a cable tie item 1 over the cap a nominal 5mm from the flange and tighten until the tie can be seen to 'waist' the shroud. Care should be exercised to engure that this 'waisting' is only just noticeable as overtightening will dislocate the adaptor bush.

3.0 Repeat operations 1.0 and 2.0 for the other 2 phases and ensure all the end caps are fully home and locked in position.

4.0 Fit the metal enclosure over the caps and bolt up in the approved manner.



SECTION J - Application of BusBar Extension Joint - Pirelli System

Installation

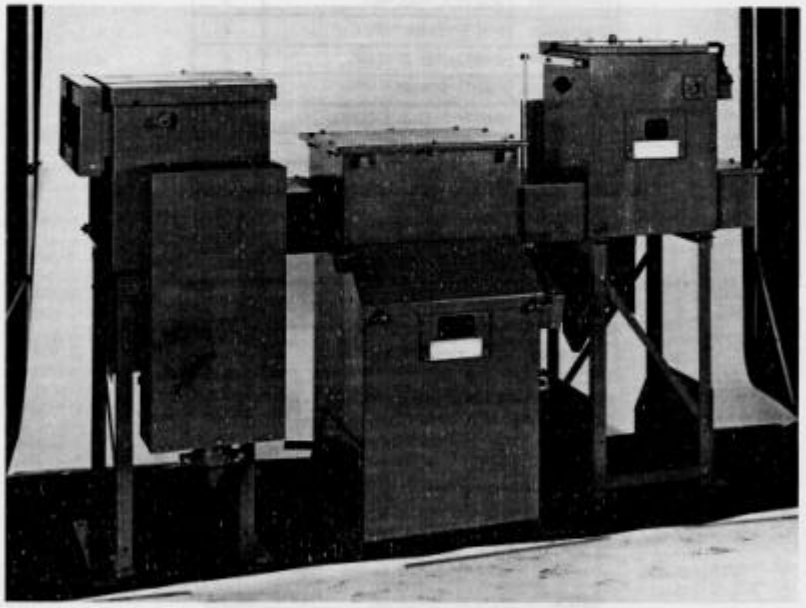
(1) When assembling a switch board refer to the contract drawing and install the equipment as described. Vertical alignment is important (a maximum variation of 3mm) to ensure trouble-free busbar connection

(2) Make the interunit busbar joints as shown. Sufficient material for each joint is supplied as a kit.

(3) Fit end caps on the exposed ends of the busbars.

(4) Check that the earthing system is properly connected—noting the unit earth bars on the frames of the EOS oilswitches.

(5) Thereafter, the commissioning, routine maintenance etc. can be taken as detailed for the standard ring main—including contact maintenance and fuse replacement for the EFS. The internal arrangement of the EOS is different from that of the standard oil switch, but adherence to Lucy's design policy means that no difficulty should be encountered. For convenience, weights, spares etc. are listed with the ring main unit.

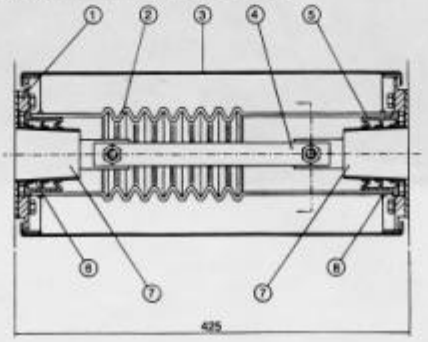


SECTION J - Application of BusBar Extension - Pirelli System

Complete Joint Box Kit List

STORES CD. REFERENCE	DESCRIPTION	QTY.
3860004007	TOP COVER ASSY	1
3860005007	BOTTOM COVER ASSY	1
3868001000	MOULDING	2
3867901001	GASKET	2
FK11120001	M8 HEX. FULL NUT	24
FL20120001	M8 GROVER TYPE	24
3863009020	LINK	12
FA31143501	M12 x 35 HEX. HD. SETSCREW	6
FK11140001	M12 HEX. FULL NUT	6
FL20140001	M12 GROVER TYPE	6
	PIRELLI REF SF9030A	1
38630060020	EARTH STRAP	1
3860008007	EARTH FLEXIBLE CONN.	1
FL10110001	M6 FLAT FORM A	11
FK11110001	M6 FULL NUT	11
FL50110001	M6 SHAKEPROOF WASHER	11
FL10130001	M10 FLAT FORM A	3
FK11130001	M10 FULL NUT	5
FA31132001	M10 x 20 HEX. HD. SETSCREW	1
FL50130001	M10 SHAKEPROOF WASHER	3

Assemble as DRG 3860016007



SECTION J - Application of BusBar Extension - Pirelli System

Assembly of BusBar Joint

Fitting Silicone Tubing/Adaptor Bush

1 To fit the silicone tubing apply a small amount of silicone compound to the bushing and also to the inside of the tube. Fold back the leading edge of the tube to ease application and slip the tubing onto the bushing. When fully home flip over the leading edge and trim the tube to sit flush with the end of the bushing. Repeat for the other five bushings.

2 To fit the adaptor bush apply a small amount of silicone compound to both the tube and the adaptor bush and slide on the adaptor bush as per drawing. Ensure that the adaptor bush is fully home and, in the case of the outer bushings, in contact with the glass fibre moulding that is bolted to the casing.

The centre adaptor bush will slide up the bushing a little further as it does not contact this moulding. Therefore to fit it, it should be pushed up the bushing until it bottoms on the heads of the 4 bolts that fix the resin bushing in the casing. Repeat the operation and fit the remainder of the adaptor bushes in the same way.

3 Using a suitable degreasing solvent remove any residual silicone compound left on the silicone tube as this will help lock the adaptor bushes into position.

Fitting the Flexible Shrouds

1 Take all six copper busbar links and bolt to the bushings on one side only (no more than finger tight).

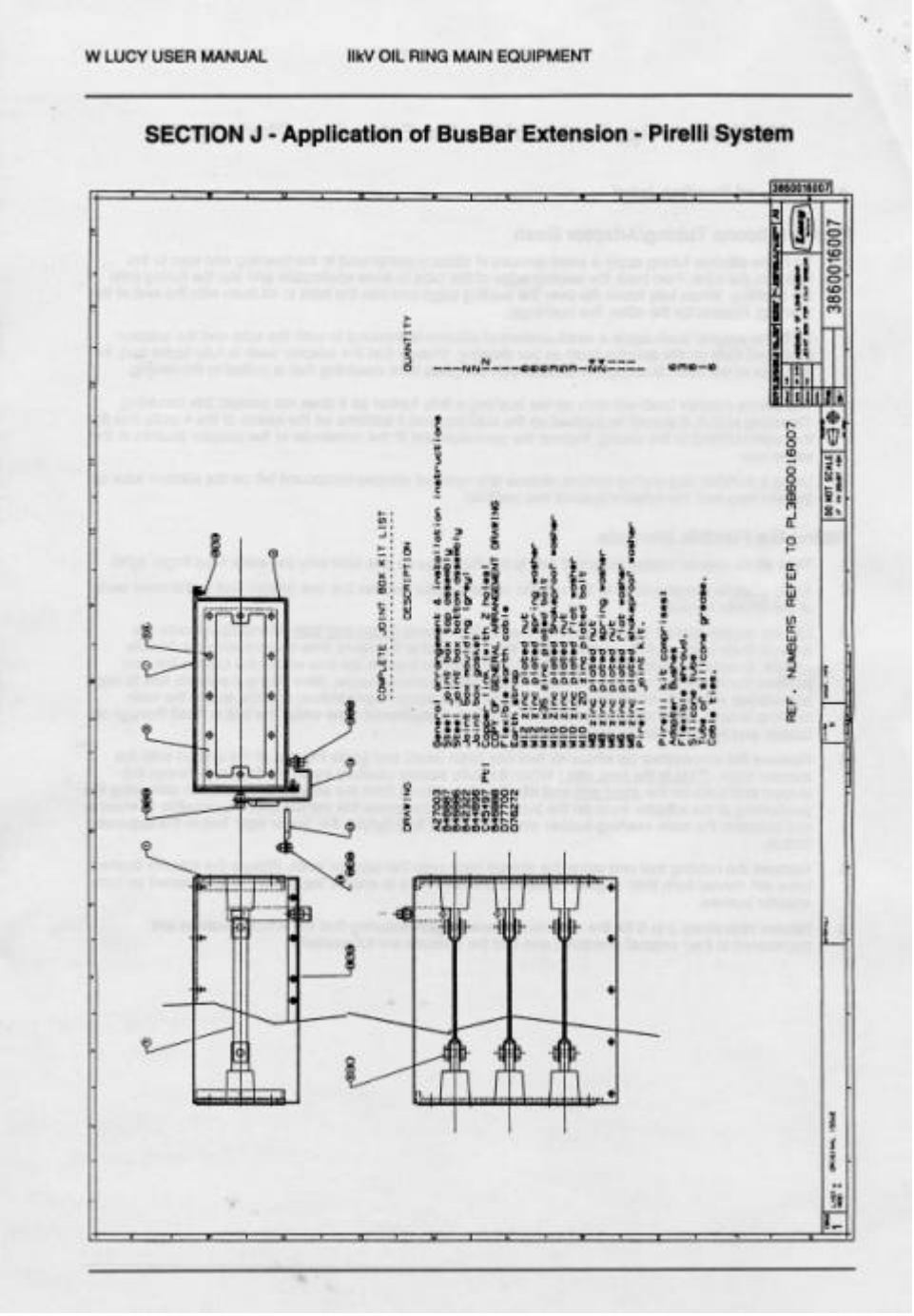
2 Apply silicone compound on to the outside of the adaptor bushes (on one phase) and to the inner ends of the flexible shroud.

3 Lift one copper busbar link and slide on the flexible shroud (short end first). Manipulate it onto the adaptor bush until it is fully seated. Lower the link whilst at the same time compressing the flexible shroud. Ensure the shroud is sufficiently compressed to expose the free end of the copper link and position the link in line with the bolt hole on the resin bushing busbar. Now taking a suitable tool (a large screwdriver will work) insert it between the end of the compressed shroud and the end of the resin bushing busbar. It will serve to hold the shroud in a compressed state whilst the bolt is fitted through the busbar and tightened to the approved torque.

4 Remove the screwdriver (or whatever tool has been used) and guide the end of the shroud onto the adaptor bush. (This is the long end.) When it is fully seated carefully insert the fingers between the shroud and bush on the short end and slip the shroud back from the adaptor bush without disturbing the positioning of the adaptor bush on the bushing. Again compress the shroud until it is possible to insert a tool between the resin bushing busbar and shroud and fully tighten the 'finger tight' bolt to the approved torque.

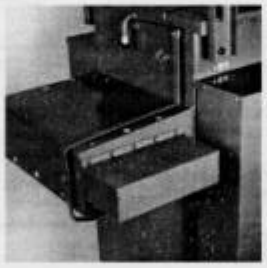
5 Remove the holding tool and guide the shroud back onto the adaptor bush. Ensure the adaptor bushes have not moved from their original positions, and take care to ensure the shroud is fully seated on both adaptor bushes.

6 Repeat operations 2 to 5 for the other two phases, again ensuring that the adaptor bushes are maintained in their original positions, and that the shrouds are full seated.


W LUCY USER MANUAL
IIkV OIL RING MAIN EQUIPMENT
SECTION J - Application of BusBar Extension - Pirelli System
3860016007
REF. NUMBERS REFER TO PL3860016007
QUANTITY
DESCRIPTION
DRAWING

Annex B - Raychem System
W Lucy User Manual
Sections E and H

SECTION E - Application of Bus Bar End Cap - Raychem System



Contents of End Cap Kit. Ref. B46164.

Raychem Kit Ref. SMOE 3192
Consisting of: Raychem 1061 Mastic Tape
Red end cap.

Box cover
Cover gasket
12 - M8 full nuts
12 - M8 spring washers

SECTION E - Application End Cap Insulation

General Instructions

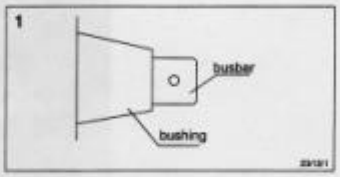
Use a propane (preferred) or butane gas torch.

Adjust the torch to obtain a soft blue flame with a yellow tip. Pencil-like blue flames should be avoided.

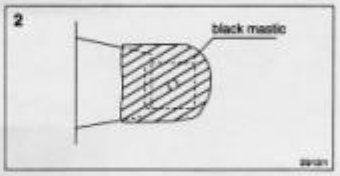
Keep the torch aimed in the shrink direction to preheat the material.

Completion of end seal

1 Clean and degrease the bushings, along with the busbars.



2 Wrap the black mastic over the end of and around the busbars, overlapping the bushing as shown in drawing 2.

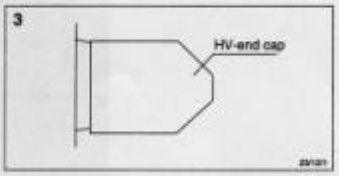


3 Push the red HV end cap fully over the wrapped assembly (drawing 3).

Apply heat at the closed end of the cap (moving the flame continuously) until it softens.

Continue around the body of the cap towards the open end until fully shrunk; making sure that no air has been trapped inside.

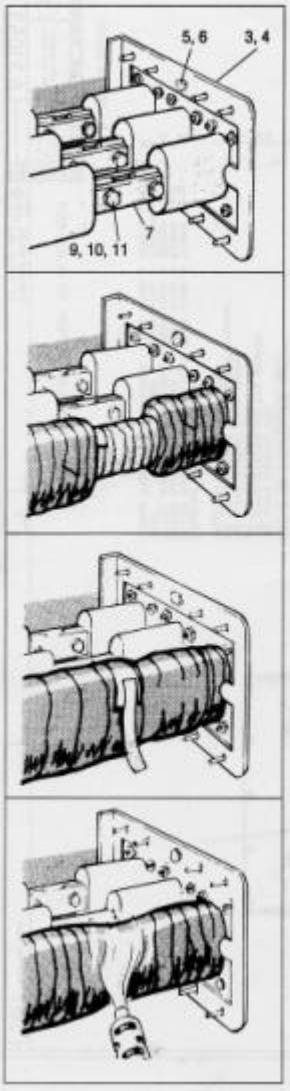
Use a gloved hand to push the end cap onto the bushing and prevent it sliding off while hot.



Repeat above with the two remaining phases.

4 Fit steel cover and gasket over completed assembly.

SECTION H - BusBar Extension
Application of BusBar Extension Joint - Raychem System



Assembly of Components and Jointing Procedure

1 Fit one gasket Item4 over the RMU bushings and onto the studs on each switch tank.

2 Assemble one moulded flange plate Item 3 over the RMU bushings and onto the studs on each switch tank (moulded rib to rear). Secure mouldings and gaskets using M8 nuts and lockwashers Items 5 & 6.

3 Position R.M. units (425 mm between tanks).
The steel protective cover may be temporarily fitted and used as a template.

4 Abrade the surfaces of the bushings using emery cloth wipe away any dust or powder produced

5 Clean each bushing (nsulation and copper stem) with a grease solvent wipe dry.

6 Clean copper links Item 7 and fix each side between bushing stems.
Ensure Link Bolts Items 9, 10, 11 Are Fully Tightened
Use a Propane (Preferred) or Butane Gas Tank. Adjust the torch to give a soft blue flame with a yellow tip. Pencil like blue flames should be avoided . Keep the torch moving continuously to avoid scorching the material.

7 Preheat copper stems and links until warm to the touch

8 Divide the contents of the kit equally between the three phases.
To ease jointing it is recommended that each phase joint is completed before proceeding with the next phase joint and that all three phase joints be shrunk individually to insure even shrinkage. Centre joint first.
Note :- Ensure that a corner of the backing paper on the glassfibre tape is peeled back to enable easy removal when required. At each stage press down on the mastic to smooth down edges and remove air voids.

9 Using Raychem ref. S1129 tape (yellow) wrap over copper bushing stems, links and link bolts ensuring good contact by slightly tensioning the tape .

10 Using Raychem ref. S1085 (red) half-lap one strip over each bushing .

11 Cut the strips of Raychem ref. 51061 mastic (black) into equal lengths. Wrap one length around each end of the phase these pieces should be up to but not overlapping the bushings and overlapping in the centre

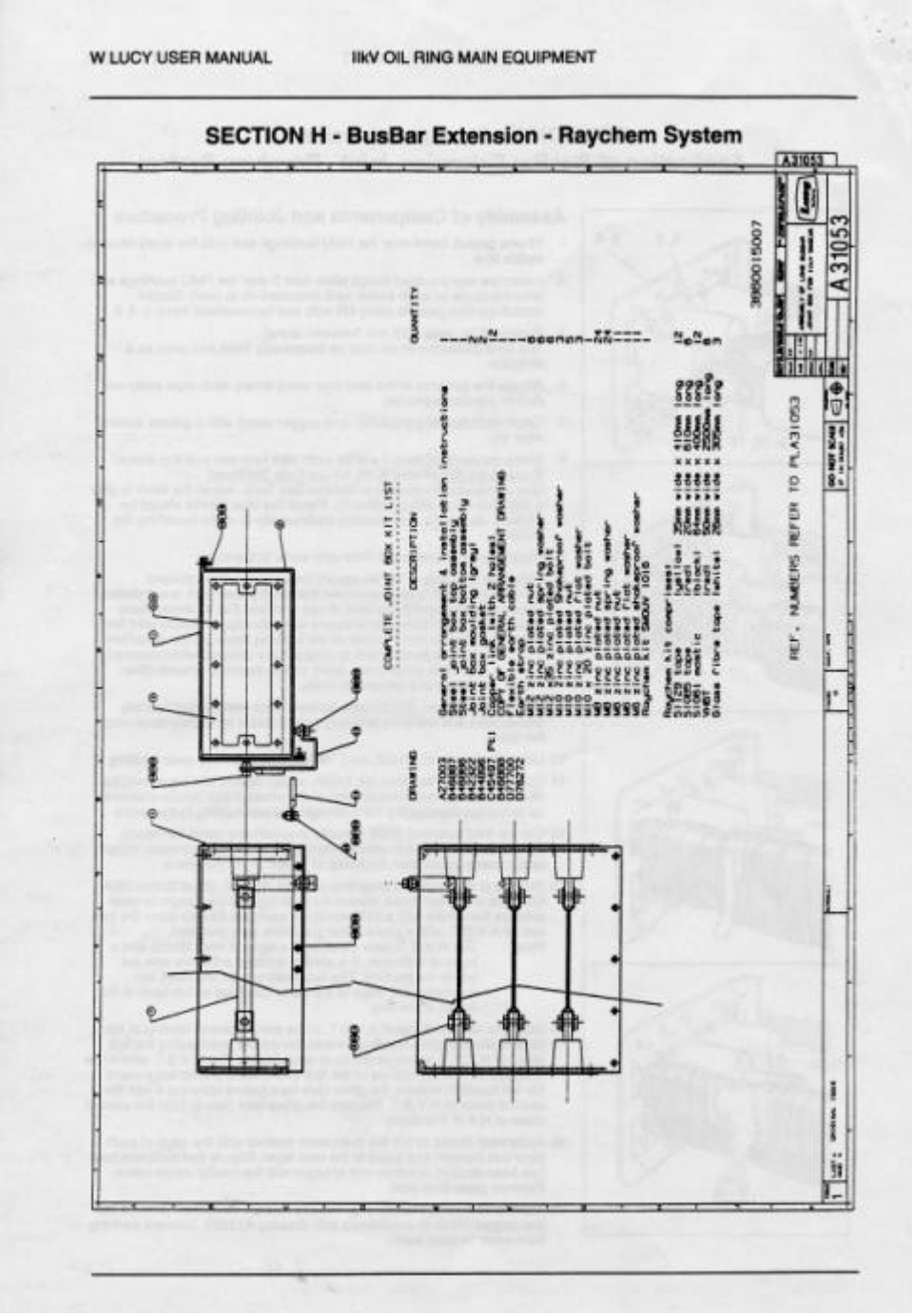
12 Cut the third length of S106 1 mastic longitudinally down the centre. Wrap these two strips to overlap the bushings by approximately 10mm and to make up an even thickness of 51061 along the phase

13 Starting at the bulkhead wrap one piece of H.V.B.T. (Heat Shrink Side Out) one and a half times around the bushing and then begin to wrap towards the centre with a 213 overlap of each lap. Fasten down the free end of H.V.B.T. with a piece of the glassfibre tape provided.
Note :- The H.V.B.T. tape consists of a layer of Heat Shrink and a layer of Adhesive. It is always spooled adhesive side out within the packing. The two sides can be identified by examining the edge of the tape. The Heat shrink layer is the lighter of the two.

14 Wrap the second piece of H.V.B.T. in the same manner starting at the other bulkhead and wrapping towards the middle overlapping the first piece of H.V.B.T. at the centre by at least 50mm. The H.V.B.T. should be wrapped so that the helices of the first and second pieces are parallel. Do not forget to remove the glass fibre tape before covering it with the second piece of H.V.B.T. Replace the glass fibre tape to hold the second piece of H.V.B.T in place.

15 Apply heat (flame or hot air) in an even manner until the edge of each layer has beaded and fused to the next layer. Ensure that sufficient heat has been applied to soften and amalgamate the mastic layers below. Remove glass fibre tape.

16 Allow to cool before energising. Visually inspect completed joint. Fit top and bottom cover in accordance with drawing A31053. Connect earthing from cover to main earth.


W LUCY USER MANUAL
IIKV OIL RING MAIN EQUIPMENT
SECTION H - BusBar Extension - Raychem System
A31053
REF. NUMBERS REFER TO PLA31053

Annex C - Extensible units BusBar coupling Shrink Polymer System

SHRINK POLYMER SYSTEMS

CABLE INSTALLATION MATERIALS 24V to 36kV

INSTALLATION INSTRUCTION HEATSHRINKABLE BUSBAR BAND JOINT KITS FOR VOLTAGE CLASS 12-17.5kV

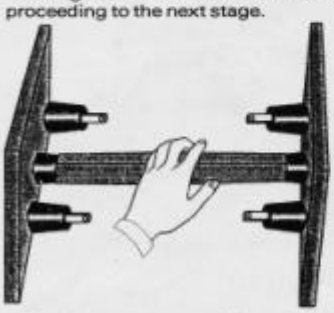
1. Fit the Gaskets over RMU Bushings and assemble Flange Plates onto Studs (Moulded rib to rear). Tighten using M8 Nuts and Washers.

2. Position the Ring Main Units (Short version 240mm, Long 425mm). Use the Steel protective cover as a template.

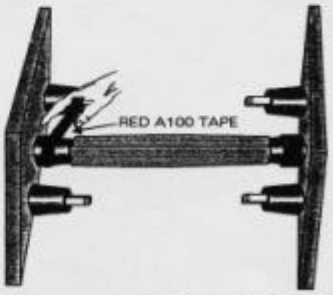
3. Divide the kit contents into 3 individual sets.

4. Depending on access, user shall determine which phase to install first. After fitting the Phase Links, lightly abrade the Bushings in a circumferential manner. Thoroughly clean the Bushings and the Phase Links before proceeding to the next stage.

5. Pre-heat the Links with a soft flame (Propane preferred). Lay the strips of Grey 4SC HV Mastic Tape longways across the Link. Press and squeeze without overstretching the Tape.



6. Continue to lay remaining strips of the 4SC HV Tape using slight overlap, squeeze and press Tape onto the Links until all the Nuts and Bolts are totally encapsulated. **Note:-** Extend the Tape onto the Bushings by 10mm approx.



7. Wrap two turns of the A100 Red Mastic Tape onto the Bushings within 10mm from Back Plate.

©

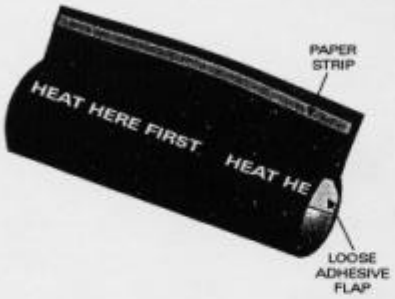
8. Lay the 212D Black Mastic Strips across the Links in the same manner as the Grey Tape previously applied and squeeze all the Tapes together.

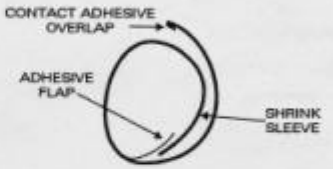
Applying The Heatshrink Wrap Sleeve

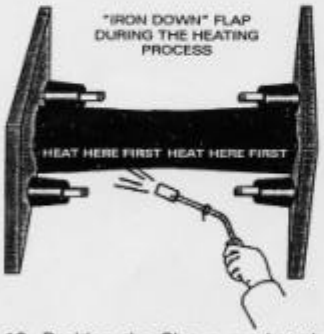
9. Remove the Plastic Release Film from the Wrap Sleeve whilst being careful not to pull the loose adhesive flap along with it.

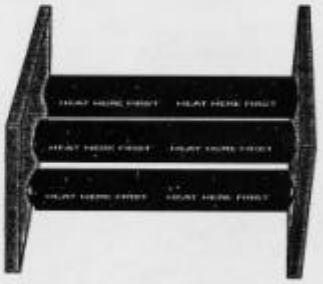
10. Form the Sleeve into a Tube around the Phase being worked on. **Important:-** The loose Adhesive Flap should be on the inside of the Sleeve as shown, so that the end of the Sleeve slots behind it (See sketch).

11. Remove the Paper strip to reveal the Mastic lined Seal area, press this down firmly onto the Sleeve using a blunt instrument.









12. Position the Sleeve so that the "HEAT HERE FIRST" text is visible. With a soft blue flame (Propane preferred) shrink along the "Heat Here First" area. Continue to heat this area for approximately 10 seconds until slight shrinkage (Wrinkled effect) appears. Now commence shrinking from the centre to one end at a time. Ensure that the heat is applied evenly all around the Sleeve. Sealant should be visible at Sleeve ends once fully shrunk.

13. Repeat the same procedures for the remaining two phases. **Note:-** If the overlap section of the Sleeve attempts to lift, rub the Torch Head along the length of the Sleeve and continue the shrinking process.

14. Position the Steel Cover Back Plate and assemble. Allow the Completed installation to cool before energising.

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SHRINK POLYMER SYSTEMS

CABLE INSTALLATION MATERIALS
24V to 36kV

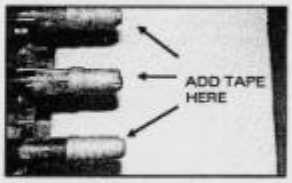
INSTALLATION INSTRUCTION
MV RING MAIN UNIT HEATSHRINK END CAP KIT
REFERENCE NUMBER : SPS 599

*** DIVIDE THE KIT INTO THREE INDIVIDUAL SETS ***

1. Abrade all Bushing surfaces circumferentially.

2. De-grease Bushing surfaces and metalwork with the Tissues provided.

3. Apply Grey Stress Tape around the metalwork.



4. Extend Tape onto Bushing by 20mm only. Add Tape to the ends of the Copper Bars.

5. Remove release paper from Cap. Commence shrinking at end of Cap. Hold in position with a blunt instrument to avoid movement.

6. Ensure even shrinkage by heating all around Cap.

7. When Caps are fully shrunk, allow to cool before energising.

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IMPORTANT NOTICE TO PURCHASER: Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither the seller nor manufacturer shall be liable for any injury, loss, or damage, direct or consequential, arising out of the use or the inability to use the product. Before using, user shall determine the suitability of the product for his or her intended use and user assumes all risk and liability whatsoever in connection therewith